AMENDMENTS TO THE SPECIFICATION

Please amend the paragraphs beginning on Page 4, Line 13, and ending on Page 16, Line 9, of the specification as follows:

"According to a first embodiment, the headlight comprise a ~~casing~~ housing enclosing at least one light source and on which is mounted a protective ~~glass shield~~ outer lens able to transmit the light emitted by the source, and the impact member comprises the ~~glass shield~~ outer lens shield. It is in fact the latter that the pedestrian will strike most directly. The ~~glass shield~~ outer lens is, for example mounted movably with respect to the ~~casing~~ housing, and the safety device is able to cause the displacement of the ~~glass shield~~ outer lens with respect to the ~~casing~~ housing.

Thus, the safety device may comprise an expandable sleeve on which the ~~glass shield~~ outer lens is mounted, the sleeve being mounted on the ~~casing~~ housing and defining with the latter an expansion chamber, the safety device furthermore comprising a gas reservoir connected to the expansion chamber and able to release its gas therefrom so as to cause the expansion of the sleeve and the displacement of the ~~glass shield~~ outer lens with respect to the ~~casing~~ housing.

As a variant, the safety device comprises, on the one hand, a ram integral with the

~~casing~~ housing and whose piston is integral with the ~~glass shield~~ outer lens shield, and, on the other hand, a gas reservoir connected to the ram and able to release its gas therefrom so as to cause the displacement of the ~~glass shield~~ outer lens with respect to the ~~casing~~ housing.

According to another variant, the ~~glass shield~~ outer lens is deformable and defines, jointly with the ~~casing~~ housing, an expansion chamber, the safety device comprises a gas reservoir, connected to the expansion chamber, and able to release its gas therefrom so as to inflate the ~~glass shield~~ outer lens shield.

The ~~casing~~ housing may be furnished with a decompression port the opening of which is regulated by the safety device to allow the displacement of the ~~glass shield~~ outer lens from its deployed position to its position of use.

According to yet another variant, the ~~glass shield~~ outer lens is deformable and defines jointly with the ~~casing~~ housing an enclosure, and the safety device comprises an inflatable cushion able to deploy within this enclosure so as to inflate the ~~glass shield~~ outer lens shield.

According to a second embodiment, the headlight comprises a ~~casing~~ housing enclosing at least one light source and on which is mounted a protective ~~glass~~

~~shield~~ outer lens able to transmit the light emitted by the source, and the impact member comprises both the ~~casing~~ housing and the ~~glass shield~~ outer lens.

In this case, the ~~casing~~ housing being mounted on the vehicle chassis, the safety device may comprise:

- either, on the one hand, an expansion chamber defined between the ~~casing~~ housing and the chassis, and on the other hand, a gas reservoir connected to the expansion chamber and able to release its gas therefrom so as to cause the displacement of the ~~casing~~ housing with respect to the chassis,
- or, on the other hand, a ram integral with the ~~casing~~ housing and whose piston is integral with the chassis, and, on the other hand, a gas reservoir connected to the ram and able to release its gas therefrom so as to cause the displacement of the ~~casing~~ housing with respect to the chassis.

According to a third embodiment, the impact member comprises an inflatable cushion able to deploy outside the headlight. The inflatable cushion is for example performed so as to at least partially cover the ~~glass shield~~ outer lens, when the former is in the deployed position.

In the invention, the expression "position of use" is understood to mean the state of the element considered when the headlight is operating normally, when the vehicle is undergoing no impact, no accident. Also the expression "deployed position" is understood to mean the position of the element when the impact occurs.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be better understood on reading the following description, given merely by way of example and whilst referring to the appended drawings in which:

- figure 1 is a partial perspective view, from the front, of a motor vehicle comprising, represented diagrammatically and in see-through fashion by dashed lines, a safety device intended to control the displacement of an impact member with which each headlight of the vehicle is provided;

- figures 2 and 3 are sectional, diagrammatic side elevation views of a motor vehicle headlight as represented in figure 1, where the impact member is formed by the ~~glass shield~~ outer lens of the headlight, which ~~glass shield~~ outer lens is mounted slidably on the ~~casing~~ housing; figure 2 corresponds to an embodiment where an expandable sleeve is interposed between the ~~glass shield~~

outer lens and the ~~casing~~ housing; figure 3 corresponds to an embodiment where part of the ~~glass shield~~ outer lens forms the piston of a ram integral with the ~~casing~~ housing;

- figure 4 is a view similar to FIGS. 2 and 3, where the ~~glass shield~~ outer lens of the headlight is inflatable and where a gas can be released directly in the enclosure formed jointly by the ~~glass shield~~ outer lens and the ~~casing~~ housing;

- figure 5 is a view similar to FIG. 4, where the ~~glass shield~~ outer lens of the headlight is also inflatable, but where there is provided an inflatable cushion capable of deploying in the enclosure formed by the ~~glass shield~~ outer lens and the ~~casing~~ housing;

- figure 6 is a sectional side elevation view of a headlight whose ~~casing~~ housing and ~~glass shield~~ outer lens jointly form an impact member, the ~~casing~~ housing being mounted slidably with respect to the fixed chassis of the vehicle, an expandable member being interposed between the ~~casing~~ housing and the chassis;

- figure 7 is a view similar to FIG. 6, where the ~~casing~~ housing forms a ram whose piston is integral with the chassis, the ~~casing~~ housing being mounted

slidably on the latter;

- figure 8 is a view similar to FIGS. 2 to 7, where the headlight is equipped with an inflatable cushion capable of deploying outside the headlight by covering its ~~glass shield~~ outer lens;

- figure 9 is a view similar to FIG. 1, in which is represented the inflatable cushion of FIG. 7, in the deployed position where it covers the left headlight of the vehicle;

- figure 10 is a view similar to FIG. 4, according to a variant embodiment where the ~~glass shield~~ outer lens of the headlight is furnished with fusible zones;

- figure 10A is a detail view of the headlight of FIG. 10, according to the inset 10A chain-dotted in this figure;

- figure 10B is a detail view of the headlight of FIG. 10, according to the inset 10B depicted chain-dotted in this figure;

- figure 11 is a view similar to FIG. 10, illustrating, in the position of

use, a variant embodiment where the ~~glass shield~~ outer lens is furnished with fusible zones;

- figure 12 is a view similar to FIG. 11, in the deployed position.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Represented in FIG. 1 is a motor vehicle 1 furnished with projector headlights 2. Each headlight 2 comprises a ~~casing~~ housing 3 mounted on a chassis 4 formed by the structure of the vehicle 1.

The ~~casing~~ housing 3 encloses a certain number of internal components including at least one light source 5 mounted on a reflector 6 able to diffuse forwards of the vehicle 1 the light emitted by the source 5.

A transparent ~~glass shield~~ outer lens 7 is mounted on the ~~casing~~ housing 3 that the former encloses at the front in the manner of a cover and with which this ~~glass shield~~ outer lens defines an enclosure 8 in which are arranged the internal components 5, 6 of the headlight 2, components 5, 6 that the ~~glass shield~~ outer lens 7 is aimed at protecting.

The ~~glass shield~~ outer lens 7 comprises a front wall 9 through which it transmits out of the vehicle the light emitted by the light source 5, this front wall 9 being extended in the direction of the casing 3 by a skirt 10 via which the ~~glass shield~~ outer lens 7 is connected to the ~~casing~~ housing 3.

In the event of an impact with an obstacle, in particular a pedestrian, one wishes to forestall the impact so as to limit the bodily injuries suffered by the individual.

For this purpose, the headlight 2 comprises an impact member 11, which is displaceable between a position of use and a deployed position in which it is able to come into contact with the obstacle during the impact.

The headlight 2 furthermore comprises a safety device 12 able to cause at the appropriate moment, that is to say immediately before the impact with the obstacle, the displacement of the impact member 11 from its position of use to its deployed position.

For this purpose, at least one proximity detector 13 is provided in line with each headlight 2, this detector being linked to a control unit 14 which may be an independent processor, as represented in FIG. 1, but which may also be a component or a subprogram provided in a processor already assigned to other

tasks of electronic management of the vehicle 1, such as ignition, injection, trajectory monitoring, etc.

The control unit 14 is linked to the safety device 12 integrated into the headlight 2, so as to control the actuation of the latter and the deployment of the impact member 11 as soon as an obstacle has been detected in the path of the headlight 2.

Furthermore, the safety device 12 can comprise means 15 for allowing the displacement of the impact member 11 from its deployed position to its position of use, so as to optimize the absorption of energy during the impact. These means 15 will be described subsequently.

According to a first embodiment, the impact member 11 comprises the ~~glass shield~~ outer lens 7 of the headlight 2. In this instance, the impact member is formed by the ~~glass shield~~ outer lens 7. According to a second embodiment, the impact member 11 comprises both the ~~casing~~ housing 3 and the ~~glass shield~~ outer lens 7 of the headlight 2 (in fact, the impact member is formed by the ~~casing~~ housing 3 and the ~~glass shield~~ outer lens 7). According to a third embodiment, the impact member 11 comprises or is formed by an inflatable cushion 16 with which the headlight 2 is equipped and which is intended to deploy outside the latter.

These various embodiments will be described successively while keeping the numerical references for the same elements.

For the first embodiment there correspond six distinct variants of execution, illustrated respectively in FIGS. 2 to 5 and in FIGS. 10 to 12.

According to the first two variants, illustrated respectively in FIGS. 2 and 3, the ~~glass shield~~ outer lens 7 is mounted slidably with respect to the ~~casing~~ housing 3 between a position of use, represented by continuous lines in the figures, in which position the front wall 9 is flush with the surrounding bodywork elements 17, 18, and a deployed position, represented by discontinuous lines, in which the ~~glass shield~~ outer lens 7 projects with respect to the bodywork elements 17, 18.

According to the first variant, illustrated in FIG. 2, the safety device 12 comprises an expandable sleeve 19 on which the ~~glass shield~~ outer lens 7 is mounted. The sleeve 19 itself being mounted on the ~~casing~~ housing 3.

The sleeve 19, which is for example made of an elastomer, exhibits a pleated central portion 20 extended on one side by a rear end 21 fixed to the ~~casing~~ housing 3, and on the opposite side by a front end 22 to which the skirt 10 of the ~~glass shield~~ outer lens 7 is fixed.

The sleeve 19 defines together with the ~~casing~~ housing 3 an expansion chamber 23, while the safety device 12 comprises a gas reservoir 24 connected, on the one hand, electrically, to a control unit 14 and, on the other hand, fluidically, to the expansion chamber 23.

As soon as an obstacle has been detected by the detector 13, the control unit 14 actuates the opening of the reservoir 24 which releases its gas into the expansion chamber 23. The pressure of the gas causes the dilation of the pleated portion 20 and the expansion of the sleeve 19 whose front end 22 is propelled frontward, driving the ~~glass shield~~ outer lens 7 toward its deployed position.

According to the second variant, illustrated in FIG. 3, the safety device 12 comprises a ram 25 integral with the ~~casing~~ housing 3 and whose piston 26 is integral with the ~~glass shield~~ outer lens 7 (or vice versa). The ram 25 may be an add-on piece fixed rigidly to the ~~casing~~ housing 3, but it is in this instance formed directly by an external wall of the ~~casing~~ housing 3. As far as the piston 26 is concerned, it is formed, as may be seen in FIG. 3, by the skirt 10 of the ~~glass shield~~ outer lens 7.

The safety device 12 comprises, just as for the first variant, a gas reservoir 24

connected electrically to the control unit 14 and fluidically to the ram 25.

As soon as an obstacle has been detected by the detector 13, the control unit 14 actuates the opening of the reservoir 24 which releases its gas into the ram 25. The pressure of the gas causes the forward displacement of the piston 26, the latter thus driving the ~~glass shield~~ outer lens 7 toward its deployed position.

According to the third and the fourth variants, illustrated respectively in FIGS. 4 and 5, the ~~glass shield~~ outer lens 7 is deformable between a position of use, represented by continuous lines in FIG. 4 and by discontinuous lines in FIG. 5, in which position the front wall 9 is flush with the surrounding bodywork elements 17, 18, and a deployed position, represented by discontinuous lines in FIG. 4 and by continuous lines in FIG. 5, in which the front wall 9 is domed so as to project with respect to the bodywork elements 17, 18.

According to the third variant, illustrated in FIG. 4, the enclosure 8 constitutes an expansion chamber, while the safety device 12 comprises a gas reservoir 24 connected electrically to the control unit 14 and fluidically to the expansion chamber 8.

As soon as an obstacle has been detected by the detector 13, the control unit 14

actuates the opening of the reservoir 24 which releases its gas into the expansion chamber 8. The releasing of the gas is illustrated in FIG. 4 by the arrows f. The pressure of the gas causes the inflation of the front wall 9 of the ~~glass shield~~ outer lens 7 which thus occupies its deployed position.

According to the fourth variant, illustrated in FIG. 5, the safety device 12 comprises an inflatable cushion 27 capable of deploying in the expansion chamber 8 by bearing against the front wall 9 of the ~~glass shield~~ outer lens 7 so as to cause its inflation.

In the folded-back position, the cushion 27 is contained in a cartridge 28 fixed to the ~~casing~~ housing 3. The cartridge 28 is for example received in a housing 29 which, made in the ~~casing~~ housing 3, is open toward the expansion chamber 8 so as to allow the deployment therein of the inflatable cushion 26.

As we have seen, means 15 may be provided to allow, and possibly control, the recoil of the impact member 11.

These means 15 comprise for example a decompression port 30 made on the ~~casing~~ housing, and the opening of which is regulated by the control unit 14 so as to control the drop in the pressure in the enclosure 8 and thus to allow, by

controlling it, the recoil of the ~~glass shield~~ outer lens 7. In the case of the fourth variant described hereinabove, a complementary port 31 will be provided, made directly in the cushion 27.

The fifth and sixth variants are close, in their principle, to respectively the third and fourth variants just described. Moreover, the common elements bear the same numerical references. They are distinguished therefrom in fact by the presence, on the ~~glass shield~~ outer lens 7, of fusible zones.

Thus, according to the fifth variant, illustrated in FIGS. 10, 10A and 10B, the ~~glass shield~~ outer lens is furnished with one or more fusible zones 40 which in this instance take the form of one or more grooves 40 made in the skirt 10, as is represented in FIG. 10A (where the skirt is represented in its upper part) and 10B (where the skirt is represented in its lower part).

In the event of an impact, the control unit 14 operates the reservoir 24 which releases its gas into the expansion chamber 8. The pressure in the chamber 8 grows, inflating the ~~glass shield~~ outer lens (as in the case of the third variant described hereinabove). When the gas pressure reaches a predetermined critical value, the fusible zones 40 break, causing the frontward ejection of the front wall 9.

This makes it possible in particular to prevent an overpressure in the expansion chamber 8 from causing the splintering of the ~~glass shield~~ outer lens 7, which could indeed prove dangerous for the pedestrian who is the victim of the impact.

According to the sixth variant, illustrated in FIGS. 11 and 12, the ~~glass shield~~ outer lens 7 is furnished with fusible zones 40 similar to those just described. These zones 40 break under the pressure exerted by the inflatable cushion 27 when the latter has reached a critical volume beyond which it can no longer continue its expansion in the chamber 8.

Just as in the case of the fifth variant just described, the ~~glass shield~~ outer lens 7 is projected frontward under the thrust of the cushion 27 which continues its expansion outside the chamber 8, thereby making it possible to further increase the absorption capabilities of the headlight while avoiding the splintering of the ~~glass shield~~ outer lens 7.

To the second embodiment there correspond two variants of execution illustrated respectively in FIG. 6 and in FIG. 7. The ~~glass shield~~ outer lens 7 is here rigidly fixed to the ~~casing~~ housing 3, while the latter is mounted slidably with respect to the chassis 4.

According to a first variant, the safety device 12 comprises an expandable box 32 arranged between the ~~casing~~ housing 3 and the chassis 4, and formed of two nestable elements 33, 34 which jointly define an expansion chamber 35 and of which one 33, fixed, bears against the chassis 4, while the other 34, mobile, bears against the ~~casing~~ housing 3, and can slide with respect to the fixed element 33.

The safety device 12 comprises a gas reservoir 24 connected electrically to the control unit 4 and fluidically to the expansion chamber 35 through the box 32.

As soon as an obstacle has been detected by the detector 13, the control unit 14 actuates the opening of the reservoir 24 which releases its gas into the expansion chamber 35. The pressure of the gas in the chamber 35 causes the expansion of the box 32, the mobile element 34 exerting a thrust on the ~~casing~~ housing 3 that causes its displacement with respect to the chassis 4, the mobile element 34 thus driving the impact member 11--that is to say, in this instance, the assembly formed by the ~~casing~~ housing 3 and the ~~glass shield~~ outer lens --toward its deployed position.

According to a second variant, the safety device 12 comprises a ram 36 integral with the ~~casing~~ housing 3 and whose piston 37 is integral with the chassis 4 (or

vice versa). The safety device 12 also comprises a gas reservoir 24 connected electrically to the control unit 14 and fluidically to the ram 36.

As soon as an obstacle has been detected by the detector 13, the control unit 14 actuates the opening of the reservoir 24 which releases its gas into the ram 36, the latter driving the ~~casing~~ housing 3 toward its deployed position.

In order to allow, while controlling it, the recoil of the impact member 11, it is possible to furnish the ram 36 with a gate the opening of which is regulated by the control unit 14.

According to the third embodiment, the impact member 11 is formed, as we have seen, by an inflatable cushion 16 integrated into the headlight 2. The cushion 16 is in this instance received, in the folded-back position, in a cartridge 38 fixed to the ~~casing~~ housing 3 and covered by a fusible or removable wall 39 that fuses or moves under the force exerted by the cushion 16 during its deployment.

The cartridge 38 is linked to the control unit 14 which causes the deployment of the cushion 16 out of the headlight 2 as soon as an obstacle has been detected by the detector 13. As may be seen in FIGS. 8 and 9, the cushion 16 is preformed so as to be able to at least partially cover the front wall 9 of the ~~glass shield~~ outer

lens 7 in the deployed position and thus to damp the impact of the obstacle against the headlight 2. In this instance, the cushion 16 covers the front wall 9 in full, thereby guaranteeing uniform safety whatever the location of the impact.